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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/780,434	02/12/2001	Purnendu K. Dasgupta	DasguptaD-0268A	8138

7590 08/13/2003

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EXAMINER
SODERQUIST, ARLEN

ART UNIT	PAPER NUMBER
1743	

DATE MAILED: 08/13/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/780,434	DASGUPTA ET AL.
	Examiner	Art Unit
	Arlen Soderquist	1743

-- The MAILING DATE of this communicati n appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 May 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

2. Claims 1-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagy (US 4,120,657) in view of Lopez Garcia (Analytical Chimica Acta 1995, 308, 67-76) and Becket (US 5,389,546). In the patent Nagy teaches a process for the analytical titration of liquid samples which is selective, quick and provides accurate analysis of the samples. In the process a liquid or a gas sample absorbed by a liquid is allowed to flow at a constant volume rate and overtitrated with an amount of a reagent adequate to the measurement in a definite time. Then the flow of the reagent is decreased to zero in a definite time, meanwhile continuously following, in a known way, the changes occurring in the reaction mixture. The determination of the concentration is carried out by comparing the time elapsed between the appearances of the two chemical equivalence points with calibration curves prepared with standard solutions, said time having a well defined functional relationship with the concentration of the sample. The invention is based on one hand on the recognition that the concentration of a flowing solution can be carried out very accurately by means of a programmed reagent administration provided a cyclic reagent administration program is applied which secures that during a stage of the administration program the reagent is present in an excess in comparison to the sample (overtitration). The excess of the reagent relates to the occurrence of the chemical reaction serving as a basis of the determination. On the other hand, they recognized that on adequately choosing the reagent administration program, the stoichiometric equivalence of the material flow of the flowing

solution and of the material flow of the reagent (the equivalence point for the determination of the concentration) can be determined easily. The process of the invention consists essentially in administering to a liquid sample flowing at a constant volume rate one or several reagents corresponding to the nature of measurement for definite periods, preferably in a period of 30 seconds to 5 minutes, in increasing amounts, thus overtitrating the sample, then decreasing the added material flow of the reagent or reagents to zero, similarly in a definite period, meanwhile following, in a known way, the changes which take place in the reaction mixture, and taking the time elapsed between the occurrence of the two chemical equivalence points or an amount being in any functional connection with this time as a basis for the determination of the concentration. In the course of the measurement the chemical reaction takes place, in the liquid flowing in the channel at a constant rate, between the liquid or gas sample and the reagent to an increasing extent, corresponding to the reagent addition starting from zero value and increasing in the programmed way. After attaining the chemical equivalence point between the material flow of the sample and that of the reagent, the reagent will be present more and more in an excess. Following the overtitration of a practical extent, the material flow of the reagent is decreased to zero according to a predetermined well defined program and the analysis is ended. If the same sample solution flow is present in the analysis channel, the analysis can be repeated or if a new sample solution is allowed to flow, a new measurement can be carried out by an adequate change of the reagent and of its feeding program. Column 4 lines 25-30 teaches that a particular advantage of the measurement process is that accurate measurements are possible in a range between very broad concentration limits by adequate alterations in the reagent administration program. Column 5 lines 12-20 teach that a direct feedback is installed between the detector or detector system and the programming unit. Programmed reagent feeding is carried out preferably by means of the programmable burette (5) coupled to the programming unit (4). This is suitable mainly for the programmed alterations of the volume rate of the administered reagent solution of small volume and high concentration. Columns 5-6 discuss the generation of the feeding signal and its use for complex or simple shapes. Column 6 lines 52-58 discuss the functions of the processing unit including signal and data processing and control of the programming unit (4). Nagy does not teach how the feedback is used or that there exists a lag time that the reagent adding program compensates.

In the paper Lopez Garcia discusses Linear flow gradients for automatic titrations. A manifold to perform automatic continuous flow titrations is presented. The system is based on the use of a variable-speed peristaltic pump which delivers the titrant at a linearly increasing flow rate and another pump working at a constant and higher speed, placed after the detector, the difference between both flow rates being compensated by the aspiration of the titrand (sample) through a T-piece. A solution containing the indicator is also propelled by the fixed speed pump. With such an arrangement, the flow rate through the spectrophotometric cell is constant and there is no drift of the baseline. The equations describing the behavior of such a system were 1st obtained and then experimentally checked by using both acid-base and complexometric titrations. The approach is highly reproducible (relative standard deviations below ±1.5%), but inaccurate, since the time necessary to reach the equivalence point is longer than that predicted by theory by the time it takes for the fluids to move from the merge point to the detector (page 73). To avoid the need of a previous calibration, a 2nd gradient can be performed by decreasing the variable-pump speed to zero. In this way, two equivalence points are obtained. Since both gradients are diametrically opposite, the difference in time between the two equivalence points agrees with that predicted by theory, as the errors can only cancel each other out (compensate each other, page 74). For acid-base and complexometric titrations the errors are below ±2%.

In the patent Becket teaches a system and process for monitoring and controlling metalworking fluid. The total alkalinity of an aqueous metalworking fluid is monitored and controlled by a continuous titration method that continuously supplies a stream of the metalworking fluid, at a known, controllable flow rate, to a flow-through chamber containing a static mixing element. Simultaneously and separately, a stream of acid titrant of known acid concentration is injected into the flow-through chamber at a known controllable flow rate. The acid titrant and metalworking fluid mix and react in the chamber, and the reacted metalworking fluid exiting the chamber passes over the tip of a pH electrode. The pH of the reacted metalworking fluid is continuously monitored and the output of the pH electrode used to adjust (feedback control of) the flow of acid titrant to the chamber until an endpoint pH value (typically 4) is reached. The total alkalinity is then determined from the known flow rates of the aqueous metalworking fluid and acid titrant and the known acid concentration of the titrant, or may be

determined from calibration curves of volume of titrant vs. known metalworking fluid concentration.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the feedback of Nagy to control the flow of titrant in the manner taught by Lopez Garcia because as shown by Becket the feedback allows control of the titrant in the region of the endpoint or equivalence point of the titration and would have been recognized by one of ordinary skill as reducing the amount of overtitration. It also would have been recognized by one of ordinary skill in the art at the time of the invention that the flow patterns taught by Nagy would have compensated for the lag time between when the fluids are mixed and when the mixed fluid reaches the detector.

3. Applicant's arguments filed May 30, 2003 have been fully considered but they are not persuasive. The problem discussed by applicant is the result of a typographical error. The second Nagy in the obviousness statement by examiner should have been Lopez Garcia. With that in view it is easy to see that the feedback mechanism must reverse the flow when the change in property is sensed because the flow in the Nagy system includes a delay between when the solutions are mixed and the measurement occurs. The Lopez Garcia reference clearly shows that this flow reversal is essential for an accurate determination of the equivalence point. It is noted that claim one does not require a set point to be reached but simply that a change is detected. This is clearly what the Lopez Garcia reference is teaching in terms of the change in rate of reagent flow from increasing to decreasing.

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arlen Soderquist whose telephone number is (703) 308-3989. The examiner's schedule is variable between the hours of about 5:30 AM to about 5:00 PM on Monday through Thursday and alternate Fridays.

For communication by fax to the organization where this application or proceeding is assigned, (703) 305-7719 may be used for official, unofficial or draft papers. When using this number a call to alert the examiner would be appreciated. Numbers for faxing official papers are 703-872-9310 (before finals), 703-872-9311 (after-final), 703-305-7718, 703-305-5408 and 703-305-5433. The above fax numbers will generally allow the papers to be forwarded to the examiner in a timely manner.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

August 11, 2003

Arlen Soderquist

ARLEN SODERQUIST
PRIMARY EXAMINER